

**PEER REVIEW OF EMERGENCY MEDICAL SERVICES
INCIDENT REPORTS**

STRATEGIC MANAGEMENT OF CHANGE

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ABSTRACT

The inadequate documentation of an emergency medical service (EMS) incident has been a chronic problem affecting the Saint Paul Fire Department and has become a critically important issue with the increase in litigation involving EMS operations and the evolution of quality improvement programs. The purpose of this research project was to determine whether a peer review and evaluation program could be used to improve the documentation of the Saint Paul Fire Department's EMS incident reports.

The research employed evaluative and action methods to address the following questions:

1. What data elements must be present to constitute an acceptable EMS incident report?
2. Can an objective evaluation tool be developed that could quantify the elements required for an acceptable EMS incident report?
3. Could an effective EMS incident report peer review program be accepted in a large, career fire department without creating organizational conflict and without committing additional resources?
4. Would such a program improve the quality of the department's EMS incident reports?

The procedures used to address these issues included a literature review concentrating on the design, implementation and results of other peer review programs, the development of a peer review program for the Saint Paul Fire Department, an evaluation of peer-reviewed reports at the start of the program, and an evaluation of peer-reviewed reports approximately six months after the program was implemented.

The findings of this research indicated that specific EMS incident report data elements can be identified and quantified, that a peer review program can be developed with minimal resources, that a large career fire service organization can accept the peer review process without creating organizational conflict, and that the average score on an evaluation checklist can improve after implementation of a peer review program. There is also an indication the peer review process may provide participants with a valuable learning opportunity.

Recommendations as a result of this research include the expansion of the peer review process to other areas within the Saint Paul Fire Department, the use of a participative management style when implementing organizational change, and additional causal-comparative and experimental research of the subject.

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INTRODUCTION

The Saint Paul Fire Department has been providing emergency ambulance service since 1971. Over the years, this service has evolved to an all-Advanced Life Support (ALS) level service with eleven transporting ambulances. Medical direction has been provided by the same local trauma center since the inception of the program. All 400 career fire fighters are cross-trained at minimum as certified Emergency Medical Technicians (EMT's). One hundred of these are Nationally Registered Paramedics. The department "dual staffs" its ambulances. Engine/medic crews are responsible for both an engine and an ambulance. A crew of four responds to all emergency incidents, whether fire or EMS, staffing whichever vehicle is required. The paramedic captain of the crew is generally responsible for the completion of a written EMS incident report for each EMS response.

Since the early years of the department's EMS operations, retrospective reviews of the EMS incident reports were completed on an irregular basis by fire department administrative staff, local emergency physicians and emergency medical service (EMS) coordinators employed by the department's medical directors. These reviews often resulted in comments critical of the quality of the reports. Many of the written reports were considered substandard, despite the initial training received in a paramedic training course and numerous remedial training programs conducted since the inception of the program. The criticism was often anecdotal, with an occasional example of a very poorly documented incident used as evidence that the problem was severe. To some degree, this criticism was unwarranted. There had been no clear understanding of what constituted an acceptable report, no organized, quantifiable system in place to consistently evaluate the reports, and no reliable system to provide either positive or negative feedback to the authors of the reports.

The purpose of this research project was to develop an EMS incident peer review program that would be accepted by department personnel, to improve the quality of the department's EMS incident reports, and to evaluate the overall effectiveness of the program. To accomplish this goal, action and evaluative research was conducted to answer the following research questions:

1. What data elements must be present to constitute an acceptable EMS incident report?
2. Can an objective evaluation tool or checklist be developed that could quantify the elements required for an acceptable EMS incident report?
3. Could an effective EMS incident report peer review program be accepted in a large, career fire department without creating organizational conflict and without the commitment of additional resources?
4. Would such a program improve the quality of the department's EMS incident reports?

BACKGROUND AND SIGNIFICANCE

In the first decade after the development of Saint Paul Fire Department's EMS program, responses to EMS incidents totaled less than 14,000 annually. The review of EMS incident reports was conducted by the department's administrative staff and medical directors. When deficiencies in the reports were discovered, they were often informally discussed with the authors (generally paramedic fire captains) and it was hoped that the problem would not recur. Remedial training was conducted at irregular intervals for all department paramedics. The threat of discipline was occasionally used to improve the quality of deficient reports. While these methods may have been effective on some

individuals, they were inconsistent, lacked organization, and were confusing. There was no clear standard for an acceptable report. Without a standard, “Employees cannot be held accountable for performance expectations that are vague or nonexistent” (Libby, 1994).

There also existed among many in the department, as well as some in the medical community, an attitude that the written reports of EMS incidents didn’t accurately reflect the performance of EMS crews in the field. It was believed that department EMS crews were providing a higher level of care than was indicated by the incident reports. This opinion had been expressed by the department’s medical director on many occasions. It has also been an issue of national concern. In an article titled “Debating Quality Assurance vs. Quality Improvement,” Taigman compares EMS incident reports to resumes, stating, “More often than not, they are poor reflections of reality” (1992).

By 1996, department responses to EMS incidents grew to more than 25,000 annually. There had been no corresponding increase in department personnel or physicians to personally review incident reports, no organized approach to gain improvements in the reports, and very little feedback to personnel other than very negative threats of discipline for reports that had an extreme lack of documentation.

There had also evolved a much greater emphasis on the need for proper documentation. Reports documenting EMS incidents are legal documents (Munger, 1995). There are at least two compelling legal reasons for improving the quality of EMS incident reports. With increasing regularity, Saint Paul Fire EMS crews, with their incident reports, are called upon to testify in courts of law. Often, the testimony is supporting the prosecution’s attempt to convict a suspected felon many months (sometimes years) after the incident occurred. An incomplete report makes recall of an incident very

difficult and may negatively impact the outcome of the trial. In at least one trial, a county medical examiner was concerned that a poorly documented Saint Paul Fire Department EMS incident actually served to support the case of the defendant (Dr. Michael McGee, personal communication, May 12, 1996).

Another legal problem emphasizing the importance of the EMS incident report is the increase in EMS litigation. EMS agencies are more frequently called upon to justify their actions, sometimes in court. “Not documented means not done” is a phrase commonly heard during an EMS provider’s initial training on incident report writing, and is included in the report writing manual published by the Emergency Health Services of Ontario (Culley, 1996). One study, reporting on ten years of litigation experience in a large urban EMS system, determined the EMS incident report was the best defense against an allegation of malpractice (Solar, 1985). A review of this research noted “. . . an incidence of approximately one lawsuit for every 24,000 paramedic-patient encounters. A trend of increasing litigation during the study period was noted” (Goldberg, 1990). This review indicated three times as many lawsuits were filed during the second five years of the study than during the first five. The need for a legally defensible EMS incident report is further supported by Lazar and Schappert (1991).

The evolution of EMS quality improvement programs and an increasing demand to conduct prehospital clinical research has also emphasized the importance of a well-written incident report (Polsky, 1989). Without proper documentation, a retrospective analysis of the medical practices employed by an EMS crew becomes extremely difficult.

At minimum, a poorly written report reflects very negatively on our profession. “Report writing comes with the territory of professional accountability” (Shanaberger, 1992). Similar concern is

expressed by Munger, when he states, “An EMT’s ability to learn the accepted way of documenting patient care is paramount to his/her acceptance as a professional in the EMS community” (1995).

While both Saint Paul Fire Department administrators and the department’s medical directors have long been aware of deficiencies in many of the EMS incident reports, there had been no data collected to determine how pervasive the problem was until a retrospective evaluation of 648 randomly selected reports was completed in late 1994 (Appendix A). This information documented a very real problem. The weighted average score of these reports, on a scale developed by the department’s medical directors, was 18 out of a possible 25. In addition to incomplete documentation, the evaluation also discovered some critical deficiencies in the reports that indicated 4% of our patients may not have received the appropriate medical treatment. The department’s medical directors found this alarming, and soon after issued a mandate to improve EMS incident documentation.

The Saint Paul Fire Department is committed to providing a high quality service. Its mission statement, developed through a joint labor/management process, is: “To protect the life and property of the people in Saint Paul by providing quality service, by dedicated professionals.” With the results of the evaluation, there was a clear question about the quality of the service. Of potentially greater consequence, it appeared the department was vulnerable to litigation. It was evident changes had to be made. The report writing training that had been conducted in the past without consistent follow-up and monitoring had not been effective. After analyzing the problem, it was concluded that effective change would have to include a clear understanding of what constituted an acceptable report, a consistent, objective review of the department’s EMS incident reports, and a system to provide feedback and follow-up to the authors of the reports.

Adding personnel to address the problem was not possible. The Mayor of Saint Paul was committed to reducing the size of local government. Any changes to department operations would have to be made using existing, on-duty personnel. In fact, recent administrative personnel reductions made the commitment of any resources to support the project extremely difficult.

Though the Saint Paul Fire Department enjoys a reputation for being progressive and innovative, it has recently suffered from a period of very poor labor/management relations. The fire fighter's union has considerable influence over local politicians and on several occasions used their political power to avoid changes initiated by the department's administration. In 1995, despite an earlier labor/management agreement to make significant changes in the deployment of personnel, the union successfully lobbied city council members and prevented the scheduled change from occurring. It was also involved in a nearly successful effort to remove the incumbent fire chief from office. If the members of this union, the "existing personnel," did not want to be involved in a peer review program they could likely avoid it.

The department faced a difficult problem. It had concrete evidence there was a serious deficiency in the documentation of its EMS incidents, it was not accomplishing its mission, it was faced with a mandate from its medical directors to correct the problem, and it was vulnerable to litigation. The department was unable to commit additional resources to address the problem and was suffering from uncooperative labor/management relations.

This research project directly relates to the Executive Fire Officer "Strategic Management of Change" course and contained all of the essential elements of the National Fire Academy's Change Management Model. The problem was thoroughly analyzed, a plan was developed, and the program

was implemented. The EMS Incident Peer Review Program is currently in the evaluation/institutionalism phase of the model.

LITERATURE REVIEW

A literature search at the National Emergency Training Center's Learning Resource Center was conducted using the following key words; peer review, quality improvement, documentation and EMS documentation. Resources from the Saint Paul Fire Department reference library and the resources of the department's medical directors, Ramsey EMS, were also consulted.

EMS Incident Report Required Data Elements

The literature search revealed there is currently no national standard EMS incident report and no national standard on which data elements constitute an acceptable or complete report. Shanaberger (1992), an attorney and paramedic, states, "Despite efforts to develop a standardized prehospital report, the style, format and content of the run report remains as varied as the uniforms worn by EMS providers." Wainscott and Morgan (1994), writing on EMS risk management, arrived at the same conclusion. "Patient records are required for all transported patients, yet specific elements of the record are far from universal."

Further evidence that no standard set of data elements exists was contained in an often referenced document that was developed to chart the future course of EMS, the "EMS Agenda for the Future." One of the goals listed is to: "Adopt uniform data elements and definitions and incorporate them into information systems" (United States Department of Transportation, 1996).

In the state of Minnesota, the only documentation requirement of an ambulance service is the use of an EMS incident report "... approved by its medical director." This is stated in Minnesota's

1996 edition of the Ambulance Service Administrative Reference Manual. As a result, there are hundreds of different EMS reports in use, with a great variety of data elements being collected.

The report used by the Saint Paul Fire Department is one that has been made available at no cost through the State's Emergency Medical Services Regulatory Board, with minor modifications by the department. It relies heavily on a narrative style of documentation. A sample of the report is included as Appendix B. It is similar to the reports that have been used by the department since 1971.

Some within the department who were concerned about the documentation of EMS incidents believed it could be improved with a new report that relied less on a narrative style. However, the cost and time it would take to develop a customized, redesigned report, with no existing documentation standards, was considered impractical. The existing report would have to be used, and the relevant data elements identified.

Peer Review Report Evaluation Tool

To develop a peer report evaluation tool, a review of the literature published on other peer review programs was conducted and their evaluation tools were analyzed. These included a peer review project involving the Salt Lake City Fire Department (Joyce, Dutkowski and Hynes, 1997), a peer-driven chart audit program developed for Hartson Medical Services of San Diego (Dick and Craig, 1989), and a documentation peer audit program developed for the Oakland County Emergency Medical Services (Swor, Bocka and Maio, 1991). The analysis of these apparently successful programs provided invaluable assistance in the development of Saint Paul's evaluation tool and peer review program.

Acceptance by Department Members

Eastham (1993), writing on quality improvement, states, “All too often, QA programs are viewed by personnel as unfair, mistake-catching expeditions run by people who are too far removed from the process of field work to really understand how the EMS system operates.” Dick and Craig (1989), commenting on the peer review process, state, “Many organizations have attempted the process, only to instigate outright rebellion among field personnel when their initial efforts were perceived in a negative way.”

Some of the other peer review programs dedicated significant resources to their efforts. Dick and Craig (1990) reported those who participated in the Harston Medical Services project were paid overtime. Joyce, et al. (1997) reported their project had the assistance of a Quality Improvement Coordinator. These were not options for the Saint Paul Fire Department peer review program. On-duty personnel would have to be used, performing peer audits between emergency response activities and on-duty training sessions. The program would increase the workload of the department’s administrative staff, district chiefs, and field personnel. The only anticipated benefit of the program was an improvement in the quality of the department’s reports.

Though the research of this topic was unable to identify specific peer review programs that had failed due to resistance by employees, the recent labor/management troubles of the Saint Paul Fire Department would require the careful implementation of a new quality improvement program. If the proposed peer review program was not accepted by department members, it had little chance for success.

Would the quality improve?

Other services similar in size to the Saint Paul Fire Department with EMS incident peer review programs indicated that significant improvements in EMS incident documentation could be achieved. Joyce, et al. (1997), reporting on the Salt Lake City Fire Department program, stated, “Two years’ experience with such a program showed significant improvements in 13 of 19 parameters measured with goals met in 14.” Dick and Craig (1990), reporting on the Harston Medical Services of San Diego experience, stated “The first-year results of this peer-designed, peer-driven chart audit model demonstrate that, with sound education in a management-supported, positive environment, prehospital personnel willingly adopt skills that yield research-quality documentation.” Swor, et al. (1991), reporting on the Oakland County Emergency Medical Services system concluded, “A peer review audit in this system appears to be effective in improving documentation and radio performance. Performance also improved when paramedics served as auditors.”

PROCEDURES

The use of uncompensated peer reviewers for the project would have an impact on which specific data elements would be required to create an acceptable Saint Paul Fire EMS incident report. This was necessary to make the evaluation process as objective and quantifiable as possible in this initial and potentially controversial attempt at a peer review process. Unlike some of the other peer review programs researched, the Saint Paul Fire Department did not have the resources to blind the reports to their reviewers. The randomly selected reports would not be modified in any way; this was not an anonymous review by an anonymous reviewer. Each reviewer was required to sign their evaluation.

The literature indicated there is no accepted national standard for documenting an EMS incident. The final selection of data elements was agreed upon by fire department administrators and the department's medical directors after analyzing of the checklists used in other programs and determining the essential elements in the department's reports.

The EMS incident evaluation tool, or checklist, evolved from these elements. The checklist was tested by department district chiefs who had served as paramedic captains in earlier years. They used the checklist on several hundred actual incidents and provided recommendations for changes, improvements and refinements. The final checklist was easily completed with minimum explanation, and the information that was entered was easily retrieved and compiled.

These same district chiefs, working with the department's EMS chief, developed the structure of the peer review program. All involved agreed on a basic philosophy that the program must be encouraging, educational, and enabling; when problems were identified, remedial training would be provided. Discipline for documentation that did not meet minimum standards would only be considered as a last resort. An outline of the program was submitted to the department's fire chief and medical directors for approval. They supported it. The concept was then presented to the leadership of the fire fighter's union for their comments and input. There was no resistance from the union's leadership. On the contrary, after hearing the reasons for improved documentation, they appreciated the opportunity to provide input. They stressed the importance of a program that identified department training deficiencies rather than individual personnel problems. With the support of the union officers, the program was presented to the department members who would be participating in the peer review program.

To measure effectiveness of the program, average scores of report authors would be compiled

every six months. The results would be distributed to report authors and the names of the highest three scorers would be publicly announced. Though rather simple and unscientific, those involved in the development of the program believed this feedback could improve the quality of the EMS incident reports.

Limitations

Due to a number of factors, including a lack of control over several variables, a scientific analysis of the checklist scores was not conducted. Some of these variables included changes in personnel and report authors, an inconsistent presentation of training, missed training, temporary assignment of personnel to EMS units, the cancellation of peer review sessions due to higher priority emergency response duties, and the resultant lack of time to accumulate adequate numbers for scientific analysis.

No training specifically targeting improved documentation was conducted during this project. There was no comprehensive evaluation of the evaluators completing the checklists; it was assumed the checklists were completed accurately, consistently and honestly. There was no project coordinator, other than the department's EMS Chief introducing the program to the evaluators. The scores on the report checklists were compiled by fire fighters on modified duty due to injury or illness.

RESULTS

Based on the analysis of other services conducting peer reviews and our own local needs, the data elements identified as essential were identified as the following: Demographic information (name, run number, location, destination, crew, etc.), legibility/spelling, chief complaint, history of present illness and/or mechanism of injury, past medical history, medications, allergies, initial (primary) survey (level of

consciousness, airway breathing, circulation, disability), focused (secondary) survey (head to toe examination), pertinent negatives, proper treatment documentation, response to treatment/changes enroute, one complete set of vital signs (time, blood pressure, pulse, respiration, oximetry), Glasgow coma score, author's signature, information located in correct areas of form, and pertinent times. It was agreed that an EMS incident report with these data elements would meet the standard for an acceptable report. It was also believed that these elements could be quantified; either the author of the report included the elements (or a reason for not recording them) or he or she didn't.

Using these data elements and an analysis of the checklists of the other organizations identified in the literature search, a final design of the peer evaluation tool was developed. It included input from fire department administrators, district chiefs and the department's medical directors. It was easily understood, easily completed, and the "scores" for each incident report could be easily compiled. Each EMS incident report would receive a final score from 1 to 20, with a score of 20 indicating all essential data elements had been entered. As a test of the checklist, department district chiefs representing each of the department's three shifts scored several hundred incident reports. The final design of the checklist proved easy to use. It was determined that it could serve as an objective EMS incident report evaluation tool that quantified the elements required for an acceptable report. The "Run Report Documentation Checklist" is included as Appendix C.

With the input of the district chiefs who had been involved in the development of the checklist, the department's EMS Chief, and the lead EMS coordinator of the department's medical director, the final details of the peer review program were developed. The basic elements of the program included the following:

1. Three captains per week would be scheduled to score fifty randomly selected run reports and complete the Run Report Documentation Checklist. Fifty reports per week would represent approximately 10% of the department's annual EMS responses.
2. The checklist would be attached to each of the evaluated run reports.
3. Average scores for each report author would be determined.
4. The reports and checklists, with their averaged scores, would be distributed to each author for their review.
5. If satisfactory scores had been maintained by the authors, the reports and checklists would be returned to headquarters and destroyed.
6. If satisfactory scores had not been obtained, the reports and checklists would be analyzed to determine specific deficiencies. A plan, with input from the report author, would be developed to improve performance. The reports and checklists would be placed on file.
7. If satisfactory scores were achieved after an author completed his or her performance improvement plan, his or her run reports and checklists would be destroyed.

The program description was distributed to all fire department paramedic captains (Appendix D), and explained to all fire department personnel. Few questions about the program were raised. The few negative comments that were received primarily pertained to the logistics of attempting to schedule another program into days already filled with training and emergency response activities. No one objected to either reviewing their peers' reports or having their reports reviewed.

The EMS incident peer review program began in January 1998. The first scores, on a total of 1643 randomly selected incident reports, were compiled and distributed August 7, 1998. A summary

of the results is included in Appendix E. The average department-wide score (on a 1-20 scale) of the first set of evaluations was 18.37. These first scores indicated two report authors were performing poorly. Their initial scores were 17.88 and 16.69. Each attended a meeting with the department's medical director and EMS Chief. Performance improvement plans were created to improve their performance.

A second set of scores, on a total 846 incident reports evaluated between August 7, 1998 and December 31, 1998, was compiled and distributed January 17, 1999. A summary of these results is included in Appendix F. The average department-wide score for the second evaluations was 19.05, an improvement of .68 points. The two below standard authors improved their scores from 17.88 to 19.36 (1.48 points), and 16.69 to 19.05 (2.36 points).

All report authors received the results of the peer evaluation attached to each of their evaluated EMS incident reports. A cover letter from the department's EMS chief with the department-wide average results of the peer review process was included with the evaluations. Also included in the letter was a list of the department's top three scorers, their scores and a congratulation. An example of the cover letter is included as Appendix G.

DISCUSSION

The data elements identified by the department's administrators and medical directors as essential to constitute an acceptable Saint Paul Fire Department EMS incident report, and the checklists used to evaluate the reports, were similar to those used by the other peer review programs that were analyzed. These other programs included the Harston Medical Services of San Diego project reported by Dick and Craig (1989), the Salt Lake City Fire Department project reported by Joyce et al.

(1997), and the Oakland County Emergency Medical Services project reported by Swor et al. (1991).

The Saint Paul Fire Department data element set and checklist represent a consensus of these programs, with slight modifications. A concentration was placed on data elements that were quantifiable; some of the subjective elements evaluated in the other programs were not included in Saint Paul's. With the Saint Paul Fire Department's history of a negative labor/management relations, all involved in the design of the project were very sensitive to a careful implementation and an objective process. It was believed that subjective evaluations could easily lead to organizational conflict. While the checklist contained areas for subjective interpretation and opinions, the evaluation scores included only data elements that could clearly be assigned a quantitative value. A report author either appropriately entered the data or did not, and either received a score for the entry or did not.

There was a surprising lack of resistance by personnel to a new program that required peer review of their work and an addition to their workload. In the past, new programs have been objected to by at least some personnel and occasionally there has been a refusal to participate by the fire fighter's union. The acceptance of this program was possibly due to a heightened awareness of department administration that a very careful implementation was required. The research conducted for the project indicated a program of this type could easily become controversial. In contrast to past failed program implementation efforts, many within the department were now aware of the current management practices taught in courses like the National Fire Academy's "Strategic Management of Change." As a result, a consensus was gained by all involved before proceeding to the next step. Fire department administration, medical direction, and union leadership had all agreed with the concept of the program before it was introduced to field personnel. Field personnel were given ample opportunity to ask

questions about the program and to lodge any complaints about the program before it began. The autocratic practices sometimes used in the past would likely have not been as effective. Dick and Craig (1990), reporting on the Hartson Medical Services experience and its emphasis on labor involvement, experienced a similar acceptance by personnel.

Another surprise was the willingness of the two “problem” authors to improve their documentation practices. Though in both cases they had been poor documenters for more than ten years, they committed to a performance improvement plan without objecting, carried out the plan, and demonstrated a significant improvement in the documentation of their EMS incidents.

Though the Saint Paul project was less scientific than the others researched, it appears there has been a significant improvement in the documentation of EMS incidents. Anecdotally, during routine incident reviews without completion of the evaluation checklist, medical direction EMS coordinators observed significant documentation improvements. This improvement is consistent with the other sites referenced. While the improvement in documentation isn’t overwhelming, it is clearly better than it was before the start of the program. In addition, as Dick and Craig (1990) reported on their peer review program, personnel readily accepted a sincere effort to improve the overall performance of the department in a non-punitive manner.

A possible, unanticipated benefit of the peer review program may be its educational value. Several of the less experienced report authors have commented that they have learned a great deal from participating in the program. Based on their comments, there may be two additional benefits to the peer review process. First, report authors who have historically received little exposure to the reports of others are now exposed on a regular basis. They have an opportunity to analyze both well written

and poorly written reports, and an opportunity to compare their own to each in an unthreatening environment. Second, with three reviewers attending each review session, less experienced authors (and EMS providers) have an opportunity to learn both documentation and treatment practices from those with more experience. Similar observations were reported by Swor, et al. (1991).

However, while these unanticipated benefits appear to have improved the department's operations, they cannot be scientifically analyzed. The possibility also exists, that with the great increase in attention to documentation through the peer review program, a "Hawthorne effect" may have been created. Perhaps the actual peer review and completion of the checklists have had little impact on the improvement in the department's documentation of EMS incidents and the improvements in documentation are simply due to the increased attention given the subject.

The organizational implications of this project are significant. By using modern participative management theory and elements of the change management model, a potentially controversial program was painlessly implemented and apparent improvements in EMS incident documentation were achieved. The same management principles could be applied to most new initiatives.

RECOMMENDATIONS

Recommendations as a result of this project include the design of scientific experimental research to determine the effectiveness of a peer review program. Scientific research should consider isolation of the many variables involved, a sample size of adequate numbers for statistical significance, consideration of blind samples, a control group, and a statistical analysis.

Despite the lack of science involved in this project, an expansion of the peer review process to

other areas within the Saint Paul Fire Department can be recommended. With adequate preparation and planning, a similar process could potentially improve the critical written documents of other divisions, including fire inspection and arson investigation reports. On a larger scale, if an objective and quantifiable peer review evaluation system could be developed, it should be used to evaluate department operations rather than simply reports. Of possibly greater value than the quality improvement element, the peer review process may provide a valuable opportunity to compare proper and improper documentation practices by reading and analyzing the reports and actions of others.

The project may have also demonstrated the value of using an organized approach to address a problem, and the value of involving labor and management in the development and implementation of a new program. Future projects could benefit from such a process. Adoption of the National Fire Academy's Change Management Model department-wide should be considered.

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St. Paul Fire QI Summary**Objectives**

The original objectives of this project were to:

1. Assess the completeness and accuracy of run report documentation.
2. Determine the appropriateness of pre-hospital treatment.
3. Determine whether assessments are being adequately performed.
4. Determine the frequency that non-transporters are cleared by MRCC.
5. Determine the appropriateness of transports by Ambulance 9.
6. Compare run reports written by paramedic captains vs. EMT captains.
7. Use the data collected to develop the format for future run review sessions.

Methods

648 runs (excluding cardiac arrests) were randomly pulled between 4-1-94 and 4-30-94 and scored using the system described on the attached Run Report Charting QA Report. Most of the runs were individually scored by a RN/Paramedic with QA experience, and who was unfamiliar with the EMT's and paramedics. Results were then compiled and reported according to training level. The total time spent on the project was estimated to be 70 hours.

Background

Training on the use of the Glasgow Coma Scale (GCS) was done in May of 1994.
Information bulletin #686 (attached) was issued February 25, 1994.
Information bulletin #722 (attached) was issued August 19, 1994.

Definitions: Assessment

Thorough: Both the primary and secondary survey were well documented.

Minimally Adequate: Minor components of the primary and/or secondary surveys were missing.
For example, skin color and temperature.

Inadequate: The primary and/or secondary survey were missing important, essential information.
For example, a patient with a neck or back injury that was missing CMS documentation.

Definitions: Treatment

Aggressive: Everything the reviewer could think of, that would be appropriate for, or benefit the patient, was done.

Nonaggressive (Appropriate): The patient was treated appropriately, but could've benefited from additional treatment. For example, a patient with chest pain that is given nitro without relief, but does not receive Morphine.

Substandard: The patient did not receive the standard of care. See log.

Results

	<u>EMT's</u>	<u>Paramedics</u>	<u>Department</u>
Total runs reviewed	198	450	648
Call nature: medical	125 (63%)	312 (69%)	437 (67%)
Call nature: trauma	73 (37%)	138 (31%)	211 (33%)
GCS doc. in trauma	0 (0%)	4 (3%)	4 (2%)
TX received: BLS	151 (76%)	294 (65%)	445 (69%)
TX received: ALS	47 (24%)	156 (35%)	203 (31%)
Medic cosign on ALS	26 (55%)		
High score average	20.8	21.9	
Low score average	16.2	15.3	
Weighted avg. score	18.3	18.1	
#Runs no-loaded	48 (24%)	86 (19%)	134 (21%)
#No-loads not cleared	22 (46%)	22 (26%)	44 (33%)
#No-loads w/o pt. sig.	10 (21%)	29 (34%)	39 (29%)
#Transports	150 (76%)	364 (81%)	514 (79%)
#Trans. w/o RN sig.	29 (19%)	182 (50%)	211 (41%)
Assess: Thorough	117 (59%)	263 (58%)	380 (59%)
Assess: Min. adequate	68 (34%)	178 (40%)	246 (38%)
Assess: Inadequate	13 (7%)	9 (2%)	22 (3%)
TX: Aggressive	110 (55%)	261 (58%)	371 (57%)
TX: Non-aggressive	81 (41%)	170 (38%)	251 (39%)
TX: Substandard	7 (4%)	19 (4%)	26 (4%)
#Inapp. comments	0 (0%)	1 (.2%)	1 (.1%)
#Inapp. A9 transports	3	0	3

Substandard Treatment

- #5370 56 y.o. female w/ chest pain & SOB - no IV.
#5275 93 y.o. female w/ depressed skull & lac from fall - no tx documented.
#5277 49 y.o. male w/ syncope & poss GI bleed, BP 60/40 - no MAST.
#5675 85 y.o. female w/ open forearm fx & dec. CMS - no splint documented.
#5294 77 y.o. male w/ low BP sec. to dehydration, BP 74/56, p-126, - no fluid challenge or MAST.

Substandard Treatment (continued)

- #5316 32 y.o. male w/ dec. LOC & bump to head, unk. HPI, no hx of seizure or ETOH - no treatment documented.
- #7042 88 y.o. male w/ head lac. & rib pain from fall - no tx or resp. assess. documented.
- #7075 39 y.o. male w/ chest pain, hx of crack use - no IV.
- #7004 74 y.o. w/ dizziness, diaphoresis, BP 212/100 - no IV or monitor.
- #7017 44 y.o. w/ dislocated shoulder - no splint or support documented.
- #7028 99 y.o. w/ shortened, rotated hip - no tx or stabilization documented.
- #7065 39 y.o. 200+#, diabetic w/ HTN, chest pain & vomiting - no monitor or IV.
- #6858 72 y.o. w/ shoulder & leg pain, impression: "R/O hart", gave nitro w/o relief - no IV.
- #6896B newborn delivered during run, "color not so good" - no tx documented.
- #6245 42 y.o. female w/ chest pain & tight lung sounds - no tx documented.
- #6869 49 y.o. male, unresponsive - no tx documented.
- #6911 51 y.o. male w/ head injury & hypotension - no tx documented.
- #6113 33 y.o. male w/ exertional chest pain - no tx documented.
- #6205 40 y.o. male w/ chest pain - no IV.
- #6180 90 y.o. female w/ unpalpable BP - given MS, then arrested.
- #6151 pt. w/ hx of multiple seizures, now dec. LOC - no tx documented.
- #6972 45 y.o. male w/ chest pain, "R/O MI" - no IV.
- #6895 75 y.o. female, fell, struck head, 2" lac. - no tx documented.
- #7065 39 y.o. female w/ chest & stomach pain, hx of IDDM, HTN, ulcer - no tx documented.
- #6931 61 y.o. female who fell onto her chest, c/o SOB - no tx or resp. assess documented.
- #6545 81 y.o. male w/ dizziness & disorientation following head injury - no tx documented, taken to PMD's clinic.

Inappropriate Comments

- #7002 91 y.o. female w/ back pain from NH - "Shift change dump run".

Conclusion

Keep in mind the sample size of the study (3%). The weighted average score of the department is 18 (out of a possible 25). Treatment is non-aggressive (but appropriate) or aggressive 96% of the time. Assessments were minimally adequate or thorough 97% of the time. Despite an information bulletin on the subject, issued just prior to the sampling, 33% of non-transports did not indicate clearance by MRCC or a physician. Also, 29% of non-transports were missing a patient or parent signature. Only 3 transports were identified as being inappropriate for transport by Ambulance 9. In comparing EMT to paramedic run reports, paramedics had a higher (not significant) average high score and a lower (not significant) average low score, but EMT's had a higher (not significant) weighted average score overall.

Future training should target all of these areas and include review of current protocols and the introduction of new ones. Once training has been completed, a repeat sampling should be performed to measure improvement, and an annual review to monitor compliance.

APPENDIX B

MINNESOTA EMERGENCY MEDICAL SERVICES REGULATORY BOARD

AMBULANCE REPORT

817169

Company:		Reason for call:		GLASGOW COMA SCALE <table style="width:100%; border-collapse: collapse;"> <tr> <th style="width:33%;">Eyes</th> <th style="width:33%;">Verbal</th> <th style="width:33%;">Motor</th> </tr> <tr> <td>Spontaneous 4</td> <td>Oriented 5</td> <td>Obeys 6</td> </tr> <tr> <td>To voice 3</td> <td>Confused 4</td> <td>Localizes 5</td> </tr> <tr> <td>To pain 2</td> <td>Inap. words 3</td> <td>Withdraw 4</td> </tr> <tr> <td>None 1</td> <td>Inap. sounds 2</td> <td>Flexes 3</td> </tr> <tr> <td></td> <td>None 1</td> <td>Extends 2</td> </tr> <tr> <td></td> <td></td> <td>None 1</td> </tr> </table>								Eyes	Verbal	Motor	Spontaneous 4	Oriented 5	Obeys 6	To voice 3	Confused 4	Localizes 5	To pain 2	Inap. words 3	Withdraw 4	None 1	Inap. sounds 2	Flexes 3		None 1	Extends 2			None 1
Eyes	Verbal	Motor																														
Spontaneous 4	Oriented 5	Obeys 6																														
To voice 3	Confused 4	Localizes 5																														
To pain 2	Inap. words 3	Withdraw 4																														
None 1	Inap. sounds 2	Flexes 3																														
	None 1	Extends 2																														
		None 1																														
Crew:																																
Date:		Call #																														
Location:																																
Destination:																																
Name:				Initial GCS: Final GCS: <input type="checkbox"/> Stretcher																												
Address:				Lights & Siren: <input type="checkbox"/> To Scene <input type="checkbox"/> To Hospital																												
				First responder:																												
Pt. M.D.		Monitor M.D./R.N.		Receiving M.D./R.N.				I Refuse Treatment/Transportation																								
AGE		LEVEL OF CONSCIOUSNESS		MENTAL STATUS		PUPILS		TIME	Medications: TYPE/DOSE																							
WT.		<input type="checkbox"/> Alert	<input type="checkbox"/> Reacts To Pain	<input type="checkbox"/> Oriented	<input type="checkbox"/> Constricted				O ₂ :																							
SEX		<input type="checkbox"/> Drowsy	<input type="checkbox"/> Unresponsive	<input type="checkbox"/> Disoriented	<input type="checkbox"/> Dilated																											
		<input type="checkbox"/> Reacts To Voice	<input type="checkbox"/> Deteriorated Enroute		<input type="checkbox"/> Reacts																											
					<input type="checkbox"/> Unreactive																											
Chief Complaint																																
History of Present Illness/Injury																																
Past History Allergies/Meds.																																
Physical Exam and Treatment																																
Other:																																
Signature:																																
Time	B/P	Pulse	Resp.	Time - Military Called				Odometer Start																								
				Enroute				At Scene																								
				Arrive Scene				At Hospital																								
				Leave Scene				TREATMENTS																								
				Arrive Hospital				<input type="checkbox"/> Oral Airway	<input type="checkbox"/> I.V. Fluids	<input type="checkbox"/> MAST																						
				In Service				<input type="checkbox"/> Esophageal Airway	<input type="checkbox"/> Medications	<input type="checkbox"/> EKG																						
								<input type="checkbox"/> Endotracheal Airway	<input type="checkbox"/> Obstetrical	<input type="checkbox"/> Follow-up																						
								<input type="checkbox"/> Restraints	<input type="checkbox"/> CPR	<input type="checkbox"/> Citizen CPR																						
									<input type="checkbox"/> Traction Splint	<input type="checkbox"/> Defibrillation																						
									<input type="checkbox"/> Spine Board	<input type="checkbox"/> Pulmonary Resuscitation																						
									<input type="checkbox"/> Cervical Collar	<input type="checkbox"/> Suction																						

ATTACH EKG STRIPS TO OTHER SIDE

AMBULANCE SERVICE

Run Report Documentation Checklist

Report Author: _____

Run #: _____

Date: _____

Category	Possible Points	Points Awarded
Demographic information (name, run #, location, destination, crew, etc.)	1	
Legibility/spelling	1	
Chief complaint listed	1	
History of present illness and/or mechanism of injury	1	
Past medical history	1	
Medications	1	
Allergies	1	
Initial (primary) survey (LOC, airway, breathing, circulation, disability)	2	
Focused (secondary) survey (head to toe examination)	2	
Pertinent negatives	1	
Proper treatment documentation	2	
Response to treatment/changes enroute	1	
One complete set of vital signs (time, BP, pulse, resp, oximetry)	1	
Glasgow coma score	1	
Author signature (must be paramedic if ALS care delivered)	1	
Information located in correct areas of form	1	
Times	1	
Total	20	

If transport, was receiving RN/MD signature obtained?

Yes No N/A

If non-transport, was MRCC clearance documented?

Yes No N/A

If non-transport, were approp. written instructions left with pt.?

Yes No N/A

If patient monitored, was ECG strip attached?

Yes No N/A

If transport refused, was patient/parent signature obtained?

Yes No N/A

Based on documentation, care/treatment appears to be:

_____ Aggressive _____ Substandard

_____ Met standard of care _____ Unable to determine (insufficient documentation)

Positive feedback: _____

Care could've been improved by: _____

Documentation could've been improved by: _____

Reviewer comments: _____

Author comments: _____

Author: Please review, comment, and return to _____ by _____.

Reviewer Name: _____

APPENDIX D

CONTINUOUS QUALITY IMPROVEMENT

The development of Continuous Quality Improvement (CQI) programs has increased greatly the past several years, and they have become a critical component of the modern emergency medical service. Areas of risk and liability are also being better defined each day. Pool Chiefs' Bataglia, Morrison, and Pream, Tim Held, and I believe we have developed a program that will both improve our operations and reduce our risk. The basic philosophy of this program is enabling and encouraging. It is our hope it will help us all do our jobs a little better.

The following pages, from Ramsey's Medical Direction Handbook, describe the full program in detail. We are committed to its implementation. Previous information on the subject was distributed in Information Bulletin #922.

Over the next few weeks we will be introducing the program to all our medic crews. Following this introduction, we will be concentrating on one area of the program, the documentation of EMS incidents. This phase of the program will proceed as follows:

1. Three captains per week will be scheduled to "score" fifty random run reports and complete the Run Report Documentation Checklist.
2. The checklist will be attached to each of the run reports.
3. Average scores for each report author will be determined.
4. The reports and checklists, with their averaged scores, will be distributed to each author for their review.
5. If satisfactory scores have been maintained by the authors, the reports and checklists will be returned to headquarters and destroyed.
6. If satisfactory scores have not been obtained, the reports and checklists will be analyzed to determine specific deficiencies. A plan, with input from the report author, will be developed to improve performance. The reports and checklists will be placed on file.
7. If satisfactory scores are achieved after an author completes his performance improvement plan, his/her run reports and checklists will be destroyed.

We have never before taken report writing this seriously. We are convinced deficient reports are the result of inadequate education and the lack of an improvement program. We ask your cooperation.

APPENDIX E

INITIAL EVALUATION SCORES (July, 1998)

A SHIFT SCORES			C SHIFT SCORES		
<u>Author</u>	<u>Reports Evaluated</u>	<u>Score</u>	<u>Author</u>	<u>Reports Evaluated</u>	<u>Score</u>
B. Paul	37	18.89	A. Mike	2	15.00
C. Tony	7	17.29	C. Ed	31	19.45
C. Dennis	32	16.86	C. Larry	43	19.62
D. Don	17	16.76	D. Joe	27	
19.89					
F. Ken	16	18.06	E. Greg	34	19.79
F. Dan	9	18.56	F. Dave	9	
18.89					
G. Mike	60	18.93	F. Jim	27	18.41
H. Mike	53	19.20	F. Rick	35	18.03
J. Stan	62	18.98	G. Dick	36	18.25
L. Frank	28	17.89	G. Dennis	45	16.69
L. Dick	5	18.20	H. John	17	19.47
L. Marty	37	17.95	K. Charlie	4	17.25
M. Steve	13	17.15	M. Jay	19	19.47
N. Joe	33	18.53	P. Gary	27	
18.40					
P. Tom	16	17.88	S. Fran	16	19.00
R. Mike	30	18.43	S. Dan	18	18.78
W. Jim	28	16.30	S. Pat	28	19.21
W. Tim	4	18.25	V. Glen	2	20.00
<u>Z. Rick</u>	<u>18</u>	<u>18.44</u>	W. Bill	15	18.73
			<u>Z. Jack</u>	<u>53</u>	<u>18.30</u>
19	505	Avg.=18.03	20	488	
Avg.=18.63					

B SHIFT SCORES

<u>Author</u>	<u>Reports Evaluated</u>	<u>Score</u>
A. Mark	24	18.21
B. Jerry	37	18.11
B. Mike	51	19.02
B. Pete	6	19.83
B. Steve	17	19.41
C. Jim	8	18.16
D. Mike	8	19.62
D. Terry	48	18.65
G. Dave	53	19.57
G. Larry	7	19.14

H. Ed	36	18.97	
K. Tom	32	16.50	
K. Jim	66	18.67	
M. Keith	59	18.92	
M. Dennis	10	17.60	
O. Dave	18	18.50	
P. Randy	29	16.24	
S. Dan	59	19.32	
S. Bill		17	17.50
S. Jim		29	17.93
W. Doug	24	18.75	
W. Bill	<u>2</u>	<u>16.50</u>	
22	650	Avg.=18.41	

EVALUATION TOTALS

Total authors evaluated=61

Total reports evaluated=1643

OVERALL AVERAGE=18.37

APPENDIX F

SECOND EVALUATION SCORES (January, 1999)

A SHIFT SCORES

<u>Author</u>	<u>Reports Evaluated</u>	<u>Score</u>
B. Paul	8	18.25
C. Tony	19	19.68
C. Dennis	14	18.29
D. Joe	21	20.00
D. Don	23	18.91
F. Jim	17	18.94
F. Doug	10	18.30
G. Mike	22	18.82
H. Mike	18	19.33
J. Stan	8	19.25
L. Dick	10	18.40
L. Marty	32	18.41
N. Joe	18	19.33
P. Tom	25	19.36
R. Mike	16	18.75
V. Glen	3	19.33
W. Jim	2	18.00
W. Tim	<u>7</u>	<u>19.14</u>
18	273	Avg.=18.92

C SHIFT SCORES

<u>Author</u>	<u>Reports Evaluated</u>	<u>Score</u>
C. Ed	6	20.00
C. Larry	29	19.83
E. Greg	18	19.89
F. Dave	4	19.00
F. Rick	19	19.95
G. Dick	14	18.57
G. Dennis	20	19.10
H. John	4	19.50
K. Bill	3	19.67
K. Charlie	27	18.85
L. Paul	1	20.00
M. Randy	1	20.00
M. Jay	11	18.82
P. Gary	23	18.57
S. Fran	2	20.00
V. Glenn	3	19.33
S. Pat	13	19.69
Z. Rick	<u>21</u>	<u>19.33</u>
18	219	Avg.=19.45

B SHIFT SCORES

<u>Author</u>	<u>Reports Evaluated</u>	<u>Score</u>
A. Mark	20	19.05
B. Gerald	26	18.04
B. Mike	26	19.42
B. Steve	6	19.00
C. Jim	1	13.00

EVALUATION TOTALS

D. John	4	20.00
D. Mike	13	19.77
D. Terry	22	19.77
G. Dave	32	19.56
G. Larry	3	18.00
H. Ed	24	19.33
K. Tom	20	17.50
K., Jim	24	19.25
M. Keith	36	19.53
P. Randy	25	19.00
S. Dan	34	19.65
S. Ken	9	19.33
S. Jim	16	18.78
<u>W. Doug</u>	<u>13</u>	<u>19.08</u>
19	354	Avg.=18.79

Total authors evaluated=55
Total reports evaluated=846
OVERALL AVERAGE=19.05



Interdepartmental Memorandum

CITY OF SAINT PAUL

July 6, 1998

TO:

FROM: Dave Huisenga
EMS Chief

SUBJECT: Peer Run Reviews

Enclosed are the randomly selected EMS run reports that were reviewed by your peers. Please review the reports and attached checklists, then return them to me. We will see that they are properly destroyed.

The average score of all reports evaluated was 18.37 out of a possible 20. The top three scorers (among those who had over 10 reports reviewed) were Joe Doran, Greg Erickson and Larry Christopherson. We commend these top three for the exceptional job they are doing; their scores were very near perfect.

We believe the process is working relatively well and the quality of our reports is improving. We've had a recommendation to discontinue bringing the reviewers to headquarters and allow them to review the reports individually, in their stations. This recommendation certainly has merit, and would eliminate the problem of running our crews short. However, I've had a number of positive comments regarding the discussion that occurs during the review process; this discussion, particularly between our less experienced report writers and our senior paramedic captains, can be a very valuable educational session. In addition, I attempt to attend the beginning of each review session. This provides an opportunity to address some of your concerns about our EMS operations. Therefore, at least for near future, the sessions will continue as they have in the past.

We will also continue this review process as we implement our pen-based documentation system. We hope your reviews will identify any deficiencies in the new system. We also hope you will provide us with recommendations to improve it.

This has been a significant change in our quality improvement program. I sincerely thank you for your cooperation and participation.